FACE INVESTIGATION

SUBJECT: Fire Fighter Dies of Asphyxiation After Falling Through the Burning Roof of his Home

SUMMARY: A 43-year-old male fire fighter (the victim) died while fighting a fire in the chimney and attic of his home. He was self-employed as a carpenter, and a 12-year member of the volunteer fire department in his rural community. The victim was home at the time of the early morning fire, and used his portable radio to call the fire department for assistance. He then used a ladder to climb to the roof of his house, and began to shovel deep rooftop snow onto the fire in an attempt to extinguish the fire near the chimney. The roofing next to the chimney collapsed, and the victim fell into the attic space below. The victim apparently tried to escape from the attic fire by crawling toward the furthermost point from the chimney, where a cubbyhole might have provided an exit. Within about ten minutes of the victim's call for help, the fire department volunteers and vehicles arrived at the scene. The captain saw the hole in the roof, but the victim so the captain turned fire fighting duties over to one team, and led a second team of five fire fighters to search for the victim. The search team, equipped with turnout gear and self contained breathing apparatus (SCBA), searched the first floor of the house without finding the victim. They then used chain saws to cut through the first-floor ceiling into the attic area for about 20 minutes before locating the victim. He was not breathing, and was pronounced dead at the scene. The FACE investigator concluded that, to prevent similar occurrences, fire fighters should:

! **ensure that at least four fire fighters are on the scene before initiating fire fighting operations on the roof of a structural fire.**

! **ensure that all fire fighters wear and use personal alert safety system (PASS) devices when involved in fire fighting, rescue, or other hazardous duties**

INTRODUCTION:

On January 26, 1997, a 43-year-old male volunteer fire fighter died after falling through the roof of his burning home while battling a chimney fire. The Wisconsin FACE field investigator learned of the incident from a newspaper article on January 27, 1997. The FACE field investigator initiated the investigation on January 29 with a call to the sheriff's department and a telephone interview of a deputy sheriff who had responded to the scene. The FACE investigator also reviewed the death certificate and coroner's report, worker's compensation report, and the sheriff's report with photographs of the incident site. Interviews with the fire department captain were initiated on March 5 and completed on May 6, 1997. The Fire Incident Reporting System report, the department's investigation report, and department standard operating procedures were obtained and reviewed with the captain. The victim's training records were not available for the FACE investigation.

The fire department in this incident serves the population of a sparsely settled rural locality. The department was formed about 13 years ago, and is comprised entirely of volunteers from the community. It also provides emergency medical responder services, using an ambulance owned by the local hospital. Approximately 22 individuals are fire fighters for the department. Eight of the fire fighters are also emergency medical technicians

(EMT), while an additional four individuals are EMT only. The department provides and receives mutual aid to three adjoining communities. On average, the department responds to 25 fire calls a year, with about 5 calls to the community where the incident occurred.

The department had written standard operating procedures for fire fighters that had been in place since the department was formed. The procedures indicated that the first fireman on the scene is officer-in-charge until relieved by a line officer. Additionally, procedures require that all fire fighters don protective clothing on arrival at the fire, and four trained fire fighters should don breathing apparatus in the case of a structural fire. Eight SCBA's are owned and maintained by the department, as well as 8 personal alert safety system (PASS) devices.

All department fire fighters receive initial and annual fire fighter training at a regional technical college. The department also conducts training activities for its members, including about five practice burns of structures or environment (e.g. grass) each year. The victim had participated in all of the mandatory training sessions and most of the optional sessions in his twelve years with the department. He responded to about three-fourths of the department's calls, and had been assistant fire chief for the five years preceding the incident. He was considered to be capable of a full response at a fire scene.

The victim was self-employed as a carpenter, and had built his own home (the site of the incident) about 20 years ago. About 13 years before the incident, a chimney fire had been extinguished in the home before it caused major damage.

INVESTIGATION: The single story private residence involved in this fire fighting incident was heated with a wood stove in the basement. A metal chimney pipe, enclosed in a wooden chase, carried the stove exhaust and smoke to the rooftop. The house was constructed with thick layers of insulation on the attic floor, and plywood covered with drywall formed the ceiling for the first floor. The residence is located about five miles from the fire department. Usually, the fire department response time to this site would be about 10 minutes.

On the morning of the incident, the victim's wife left for work about 3:30 AM. The outdoor temperature was about 30 degrees below zero F, and the wood stove was heating the home. Most areas of the roof were covered with at least one foot of heavy snow. The victim apparently became aware of the fire about 5:30 AM. He woke his daughter and asked her to leave the house, then used his portable radio to call the fire department to report an attic fire at his home. He placed a ladder to climb to the roof of his house, and began to shovel deep rooftop snow onto the fire in an attempt to extinguish the fire near the chimney. The roofing next to the chimney collapsed, and the victim fell into the attic space below. The victim apparently tried to escape from the attic fire by crawling toward the furthermost point from the chimney, where a cubbyhole might have provided an exit. Within about ten minutes of the victim's call for help, the fire department volunteers and vehicles began arriving at the scene. The fire fighters saw the hole in the roof, but couldn't determine the location of the victim. The captain turned fire fighting duties over to one team, and led a second team of five fire fighters to search for the victim. The search team, equipped with turnout gear and self contained breathing apparatus (SCBA), searched the first floor of the house without finding the victim. They used chain saws to cut through the first-floor plywood ceiling, and began a search of the smoke-filled attic near the chimney. Meanwhile, the fire fighting team had

entered the attic area from above, and had located the victim in the corner of the attic furthermost from the chimney. He was lying face down on the attic floor, and was not breathing. The victim was removed from the attic, and pronounced dead at the scene.

CAUSE OF DEATH: The coroner's report listed the cause of death as asphyxia.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Fire departments should ensure that at least four fire fighters are on the scene before initiating fire fighting operations on the roof of a structural fire.

Discussion: The victim in this incident was a member of the volunteer fire department for his community, and was also the owner of the home which was aflame. After placing the call to request fire department response, he apparently climbed a ladder to the rooftop and fought the fire alone. When the fire department personnel arrived with the pumper trucks , they were unable to locate the victim and conducted a search of the scene until the victim was located in the attic area. The National Fire Protection Association (NFPA) recommends that fire fighters operate in teams of two or more, maintaining communication and close proximity to each other. When working in a hazardous area such as a burning rooftop, at least two fire fighters would work on the roof while another team of at least two would stand by outside the hazardous area.

Recommendation #2: Fire departments should ensure that all fire fighters wear and use personal alert safety system (PASS) devices when involved in fire fighting, rescue, or other hazardous duties.

Discussion: The PASS device is a small electrical device worn by the fire fighter. It will emit a distinctive audible alarm if the firefighter is motionless for more than 30 seconds. The fire department in this case required fire fighters to wear PASS devices when working in hazardous situations, however the victim did not wait for the fire fighters to arrive with the trucks and equipment. If he had been wearing the device, he might have been rescued from the smoke-filled attic before he was asphyxiated.